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for Teachers *of*
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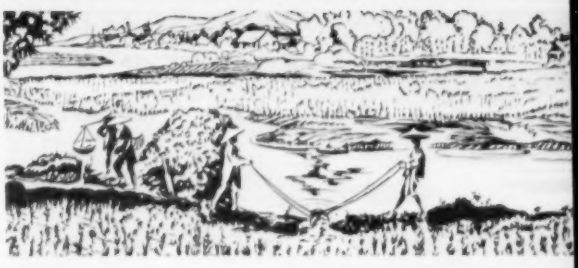

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Dr. Baugh is Professor of Geography in the University of California at Los Angeles. Her specialties are geography of Europe, historical geography of the Mediterranean and California. She served as editor of Ellen Churchill Semple's *Geography of the Mediterranean Region*, published in 1931.

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Dr. Barton's teaching experience includes all eight grades of the elementary school, high school, teachers college, liberal arts college and graduate school. He is currently dividing his time between courses offered in the College of Arts and Science, School of Education and the Graduate School of Indiana University. He taught a summer session at San Francisco State College in 1954.

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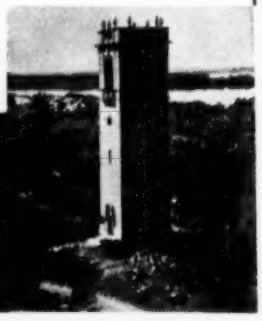

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A RECONNAISSANCE JOURNEY IN THE SOUTH SUDAN

EARL B. SHAW
State Teachers College, Worcester, Massachusetts

On February 12, 1953, General Naguib, acting for Egypt, and Sir Ralph Stevenson, representing Great Britain, signed an agreement for prompt Sudan self-government and for Sudanese self-determination within three years. This agreement ends one phase of the half-century Anglo-Egyptian dispute over Sudan control; and it is hoped that it marks the beginning of economic and political stability for a country which for centuries has been bedeviled by slave raids and even full scale war.[1]

The Sudan has an area of nearly one million square miles, about three times the size of Egypt, or one-third that of the United States (Fig. 1). Population figures are not dependable, but estimates range between six million and 10 million. Sudanese boundaries (Fig. 2) include Egypt on the north, the Red Sea on the northeast, Ethiopia on the east, Kenya, Uganda and the Belgian Congo on the south, and French Equatorial Africa on the west. All of the Sudan lies well within the tropics.

The South Sudan includes the provinces of Upper Nile, Bahr el Ghazal, and Equatoria (Fig. 2). In these three political subdivisions, which lie equatorward of the 12th Parallel North, both area and population are smaller than those of the North Sudan.

The White Nile and its Bahr el Jebel tributary, on which the author journeyed thru South Sudan, are but one part of the Nile Waterway. At Khartoum, the capital of the Sudan, the waters of the Blue and White Nile join and flow for an air line distance of approximately a thousand miles before reaching the Mediterranean Sea. In all this length, the main Nile has but one major tributary, the Atbara, which flows down from the Ethiopian Highlands, source of the Blue Nile. Equatorward from Khartoum, the White Nile has

[1] For an interesting, and in many sections geographic, account of full scale war see *The River War* by Winston Churchill, Eyre and Spottiswoode, London.

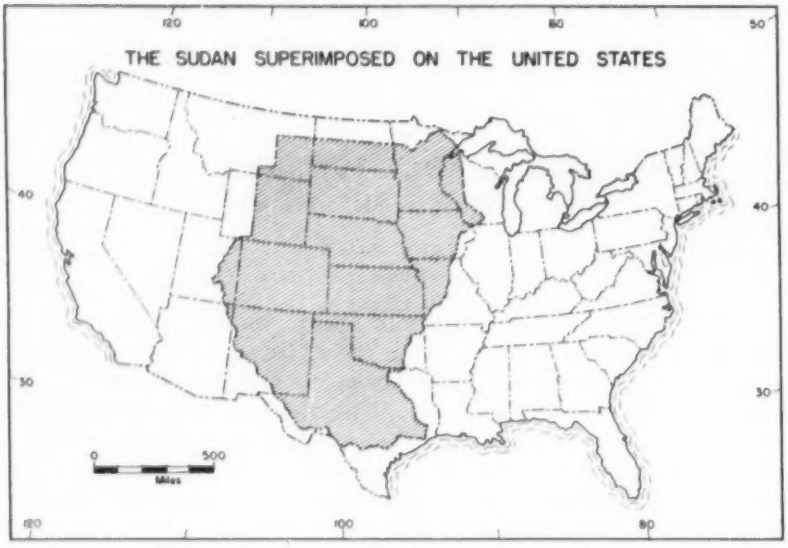

Fig. 1. The Sudan superimposed on the United States.

several important tributaries besides the Bahr el Jebel mentioned above; these include the Sobat, the Bahr el Ghazal and the Bahr el Zeraf. The largest of the Blue Nile tributaries is the Didessa, which comes from the south and drains a large area. *Goode's World Atlas.*

Juba-Kosti Boat Service

The river boat which travels from Juba, near the South Sudan equatorward boundary, to Kosti at the southern edge of North Sudan, makes the trip twice a month. The author chose the downstream journey because it takes 14 days to go upstream from Kosti to Juba, and but seven days from Juba to Kosti. He flew from Cairo to Khartoum, 1,000 miles, on February 4, remained there until the 7th, and flew 1,000 miles to Juba. On the morning of the 8th, he started downstream from Juba on the steamer Rejaf; he arrived in Kosti on the 15th, took an over-night boat train to Khartoum, and flew from that city to Cairo on the 16th. If properly scheduled the whole trip takes less than two weeks.

The Nile steamer, Rejaf, is a shallow draft, wooden, stern-wheel craft; first-class passenger accommodations include well-screened rooms and good beds; food is plentiful and appetizing except on occasions when refrigeration breaks down.

CLIMATE, VEGETATION AND ANIMAL LIFE

Is February a good month to visit the South Sudan? February is in the dry season, which lasts from September to June in Khartoum and from December until April in Juba. The author prefers dry weather even if Juba, with a temperature of 100° F. and over, is the hottest place in the Sudan during February. Juba is cooler in August than in February largely because it gets about 40 inches of rainfall during our summer months. But more rainfall encourages more swamps on the relatively flat land; and in this latitude swampy land affords fine breeding places for fever bearing mosquitoes.

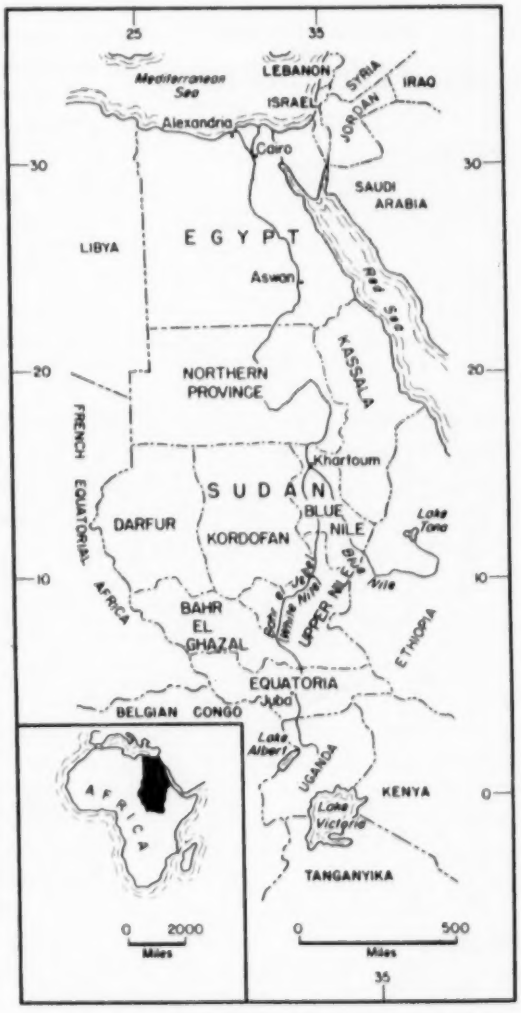

Fig. 2. The Anglo-Egyptian Sudan and its neighbors.

In crossing the Sudd of the South Sudan, the boat frequently moved near the bank giving opportunity to measure the height of tall grass vegetation. Some grasses reached the lower edge of the upper deck and measured nearly 20 feet high. The true Sudd, an Arabic word meaning block, extends from Mongalla to Lake No, a distance of about 480 miles, with a width of several miles. On

Fig. 3. Vegetation map of Anglo Egyptian Sudan (Courtesy Oxford University Press, and J. D. Tothill, *Agriculture in the Sudan*).

higher ground shorter grasses replace Sudd vegetation; these give way to park-like savanna still further away from the stream.

Just as vegetation changes from river bank to higher land so does it change as rainfall increases from north to south (Fig. 3).

F. W. Andrews in *Agriculture in the Sudan,* edited by J. D. Tothill and one of the best references on the Sudan, divides the country into east-west trending vegetation zones running from north to south as follows: desert, acacia desert scrub, acacia short grass scrub, acacia tall grass forest and broad leafed woodland and forest. Even in the south, however, there is hardly enough rainfall to produce true rain forest except on the Nile-Congo divide.

During the dry season one may see widespread grass fires thruout the South Sudan. These burnings play an important part in their influence upon African vegetation; for all over South Sudan, parts of Ethiopia and the Lake Plateau, grass is burned every year. This kills many trees and those that remain may be stunted in their growth. Fires burn the dry coarse grasses and thus give better opportunity for rapid growth of new grass with the coming of the rainy season. The natives need the new grass feed for their cattle, and start the annual fires near the end of the dry season.

Flames and smoke are spectacular by day, and more so by night. The whole sky may be lighted by sheets of flame. Birds may be seen flying just ahead of some fires to get insects fleeing from the flames. It was a unique experience to see this relationship between grass fires, migrating insects and feeding birds.

While birds eat many insects, large numbers of mosquitoes are left to carry tropical fevers. To guard against these, one should take malaria preventive regularly. No mosquitoes bother during the day; and at night one may stay behind screens to escape enormous numbers seen against the lights of the ship or flood lights illuminating the shore upon arrival at a river town.

Large numbers of wild animals may be seen on a river trip to the South Sudan. The author saw hundreds of elephants; some would turn and look at the boat as they grazed on the tall elephant grass. We saw at least 50 hippopotami, some playful enough to jump almost completely out of the water. One strayed too far from safety, for a group of natives was cutting him up for meat on the nearby shore. We saw few deer and only a half a dozen crocodile; probably ripples resulting from the movement of the boat disturbed them and caused a retreat from favored resting places. No giraffe, buffalo or members of the cat family appeared in sight altho they make their home in the Sudan. Large numbers of termite nests can be seen—ant hills whose occupants may be eaten by the natives as a delicacy. Fish life is abundant and drying fish hang

near native huts along the river bank. Many Nilotes fish from dugout canoes.

Cattle are the most numerous domestic animals, altho few are raised in the Southwest Sudan because of the tsetse fly. Not only in the Sudan, but elsewhere in Africa thousands of square miles are closed to grazing because of this pest. Indirectly the tsetse may cause soil erosion. Where there is a choice man confines his animals to tsetse-free areas. Some of these areas have insufficient grass and the resultant overgrazing encourages soil erosion. Tsetse flies also handicap man by causing sleeping sickness, altho control is successful in most of the Sudan.

People of the South Sudan

Life features of greatest interest are the people. The general term Nilotes[2] is given to the population in the Upper Nile Valley. There are numerous tribes, but those living near the Bahr el Jebel are mostly Dinka, Nuer and Shilluk. The Dinkas live along the east bank of the White Nile from Renk to Tonga and on both sides of the Bahr el Jebel from Shambe to Tombe. On the west bank of the White Nile, from Melut to Tonga are the Shilluks; and the Nuer occupy the territory between the Shilluk and Northern Dinkas to the north and the Southern Dinkas to the south, or the territory on both sides of the Bahr el Jebel from Lake No to just north of Shambe. While these three tribal groups have certain differences, adult individuals within all three are tall and slender, their heads are dolichocephalic and their color is dark brown to black; many, while relaxing, have a habit of standing on one foot, with the sole of the other pressed close against the inner surface of the knee as the whole body is balanced by leaning on a spear or stick. One may see this over and over again in traveling thru the South Sudan.

Most Nilote men go naked; married women may wear leather aprons, back and front, composed of two pieces of skin suspended from the waist. As far as climate is concerned these people need little clothing; but they may need protection from insects. The protection can be obtained by putting ashes on the body or by oiling the skin. Most everyone goes barefoot, a practice which increases susceptibility to hook worm. Such direct relationship

[2] For a good description of Nilotic tribes see Audrey Butt, *The Nilotes of the Anglo-Egyptian Sudan and Uganda*, Ethnographic Survey of Africa, edited by Daryll Forde, International African Institute, 17, Waterloo Place, London, S.W.1., 1952; also *Pagan Tribes of the Nilotic Sudan*, by C. G. Seligman.

between clothing, or lack of it, and disease on the one hand and climate on the other may interest the geographer. If one wishes to observe direct geographic relationships, he should visit people like those of the South Sudan.

What Nilotes lack in clothing, they make up in ornamentation. Anklets, bracelets, strings of beads, bangles of wood, ivory and metal are worn. Some girls place a metal ring in a hole in the upper lip; others wear such an ornament in their noses. Scars appear on cheeks and foreheads (Fig. 4). Some have beadlike rows of little flesh balls on their foreheads (Fig. 5). Mud, grease, red clay, cow dung, cow urine and other ingredients are used to produce striking hair designs such as cockscombs, knobs, saucers and many others (Fig. 5). A fisherman at Malakal arranged his front hair into a horn like prominence pointing directly forward; this horn was supplemented by a large knob shaped bunch of hair in back.

Fig. 4. Face scars on Sudanese girl.

NILOTES AND THEIR CATTLE ECONOMY

Cattle assume a dominant part in native economy. This is no surprise because Nilotic people live in a savanna land where grazing industries may show better adjustments to the wet and dry low latitude climate than crop agriculture. In addition to cattle the Nilote raises dura, a kind of millet, huge piles of which may be seen

Fig. 5. South Sudanese hair arrangement. This Sudanese man not only has a unique hair-do, but also rows of flesh beads on his forehead.

during the dry season in the open squares of Malakal; he also raises maize, fruits and vegetables. However, most Nilotes grow these crops because they must be sure of a food supply when cattle disease strikes their herds, or when the fishing or hunting season is bad. In short, they probably carry on crop farming because it is necessary; but they enjoy owning cattle, enjoy caring for them and enjoy talking about them.

During the early rains, cattle feed on young grass shoots near the permanent villages, which are invariably situated on elevated ground out of reach of the wet season floods. As the vegetation becomes rank from heavy rain, herds may be taken to the shorter grasses on higher ground by the young men of the tribe. Wet season millet and other grains, as well as vegetables and fruits, are grown in gardens near the village. At the end of the rainy season the Nilote seeks the land adjacent to the permanent water courses for dry season pastures. Camps or dwellings are less substantial here because they may be destroyed by wet season floods.

Several dry season dwellings can be seen along the river, with fruits and vegetables growing on ground kept wet from the nearby water course. Dry season fishing may also add food when grain supplies are low and cows provide less milk. The Shilluk depend more on fishing, hunting and crop raising than do the Dinka and Nuer.

Milk, meat and blood are food products derived from cattle, but herds also provide materials for other needs. Skins are made into sleeping mats, trays, fuel carriers, tethering cords, leather collars for oxen and into many other articles. Tail hairs are fashioned into ornaments; and bones and horns are used for scrapers and beaters. Cattle dung provides plaster for walls and floors of huts; dried dung is used for fuel, and, when burning, gives off a sweet smell which the Dinka like very much. Cattle urine is used for churning butter and making cheese, and also for washing. One writer says that the Nuer are "parasites of the cow" (See Audrey Butt, op. cit.).

Nuer problems involve ownership of cattle, cattle pastures, water supplies for cattle, raids on neighboring tribes for cattle, settlement of homicide and assault cases in terms of cattle, bride payments with cattle and loans of cattle to friends to diversify the risk of cattle disease. Cattle even play their part in tribal religion. Cows are dedicated to spirits and may be sacrificed in order to achieve contact with spirits. Communication with the gods may also be attained by rubbing ashes over the back of a cow and calling on the spirits during the process.

NILOTE HOUSES

Protection of cattle from cold with barns and sheds, so necessary in middle and high latitudes, is not a requirement in the South Sudan. But the Nilote builds houses for himself and family. Materials may consist of wood for framework and millet stalks for thatching. Walls are built of mud, plastered on the inside with cow dung. The mud wall doesn't reach more than a few feet, and may be protected from wet weather by an outward extension of the thatch roof. Style varies, but there is a generally recognized Nilotic pattern which is seen to perfection in the huts made by the Shilluk with their round mud walls and conical roofs thatched in layers. Dwellings in dry season camps near water courses are made of sticks and grass and may be given a coat of mud; they are usually

temporary structures and may collapse after the beginning of the rainy season.

Mention should be made of general differences in house pattern north and south of Kosti, a town on the equatorward edge of North Sudan. The Kosti houses, like those of Egypt, are made of mud bricks or stone with flat roofs. South of Kosti the houses have steeply pitched thatch roofs. There may be a relation between sharply inclined roofs in South Sudan and a heavier rainfall than that which falls on the flat topped roofs of the North.

Nilotes turn to the local environment for tools just as they use it for house materials. Gourds are fashioned into containers. Pottery is made by the women, occasionally with the assistance of men. Skins are widely used for containers of all types. Baskets are made from grasses. Wooden articles include implements, dug-out canoes, clubs, spear handles, drum frames and other items. Among the Dinka and Nuer, little clay models of cattle are made for the children, perhaps as an expression of the maker's affection for his favorite ox.

Major Differences Between North and South Sudan and Their Futures

Besides differences in house types between North and South Sudan already mentioned, there are many other contrasts between the two parts of the country. Khartoum in the North has five inches of rainfall; Juba in the South has 40 inches or more. North Sudan is desert, whereas the South possesses savanna or woodland vegetation. Northern people are shorter and lighter in color than the tall black South Sudanese who may be descended from some common ancestors living on the Lake Plateau hundreds of years ago. Wherever one may go in North Sudan, he can converse in the Arabic language. But when he turns south from Kosti he enters a region where Arabic is little known and where scores of native dialects are spoken. While grazing is an important industry in both North and South, cattle dominate southern pastures whereas camels, goats and sheep are better adapted to northern dry lands. In the North, nomads belong to the Moslem faith, but people of the South could be classed as pagan with a thin veneer of Christianity imparted by Episcopal and Catholic missions. In education, schools are few thruout the Sudan, but less frequently encountered in the South than in the North. Finally, in

politics, the North is much better organized than the South. Some day both sections may prefer an independent status as a nation, become allied with Egypt, or it is possible that the South may decide to break away from the North and join with Uganda; South Sudanese resemble people of Uganda far more than they do the people of the Northern Sudan.

TRAVEL AND FIELD WORK AT A COST OF $24.17 PER WEEK*

JAMES R. BECK
Kent State University

This is a balance sheet report of a six-weeks' field course given by the Geography Department of Kent State University in the summer of 1953. The facts with which it deals are presented as evidence that opportunity for field study and guided travel can be given at costs to students and to institutions which are directly comparable to the costs of on-campus study. Altho the values of field experiences, as parts of over-all training in geography, are generally recognized, it remains true that many students do not adequately participate in field work and that many colleges and universities do not provide adequate opportunities to participate in such work. It is assumed that cost is a factor affecting 1. the proportion of students who will share in field experiences, 2. the frequency with which student demand will justify departmental field offerings and 3. the ability of institutions to offer opportunities for field work. The thesis advanced is that it is possible to hold the cost of solid and stimulating field work to students and to institutions at the level of respective costs for on-campus study and, thereby, 1. to increase the proportion of student participation in enriching field experiences in those institutions which already offer field work and 2. to enable institutions, which have not offered opportunities for field study because they believed that they or their students could not afford it, to enrich their curriculi by regularly offering opportunities for field study. Such results would do much to stimulate the interest of college and university students in geography and to accelerate their geographic development.

* Dr. Beck will be happy to furnish anyone answers to questions concerning equipment or anything else that is pertinent or helpful in regard to his field work.

Student Cost

In 1953, the tuition cost for six quarter hours (four semester hours) of graduate or undergraduate credit for residents of Ohio, either on-campus or in the field, was $21.50. Exclusive of tuition, the per student cost for the six weeks in the field was $145.00, or at the rate of $24.17 per week. This cost was slightly below that of a single dormitory room, dormitory meals and one five-dollar text book for the six-weeks period. On the basis of student reports of personal expenditures, it seems that the total individual cost for tuition, group expense and personal spending was less than $200.00 for the six weeks. The group expense item covered board, shelter and transportation thru more than 2,500 miles. From Kent, Ohio, the field group traveled via Detroit, along the north shore of Lake Erie to the Niagara Peninsula, to Hamilton and Toronto, then northward into the country beyond Lake Nipissing and North Bay as far as Moosonee and Moose Factory on James Bay, and returned to Kent via Buffalo and the south shore of Lake Erie.

University Cost

Direct cost to the university was limited to the instructor's salary and approximated the cost to the university of offering courses of a comparable academic level on campus. The instructor-student ratio was 1 to 8, as compared to a ratio of 1 to 9.1 for all upper division and graduate courses offered by the geography department in the entire academic year of 1953. Thirteen of the on-campus courses had fewer students per instructor than the field course, three had the same number and only 12 had more students per instructor. Student tuition, therefore, paid about the same part of instructional cost in the field and on the campus.

The Low Cost Formula

The basic components of the low cost formula were 1. the selection of study areas and study topics which could be reached from base camps at which living costs could be held at the desired level, 2. transportation by private cars, 3. living in tents and 4. preparing our own food and doing our own work.

Travel expense took $75.00 of the total group expense of $145.00. Railroad fare from Cochrane to Moosonee and return and boat fare for the trip to Moose Factory cost $23.00 per person. The individual's share of car operational expense for three cars (each used for 2,800 miles) was $52.00. Car owners were paid at the

rate of 6.5 cents per mile. Experience demonstrated that this was sufficient to meet operational cost and to provide a surplus which met a little more than half of the total expense of the individuals supplying cars.

Three cars, each equipped with a tarp-covered, one-wheel trailer, were used to transport the ten individuals of the party, professional equipment, camp gear, food and personal belongings. The trailers were an important part of our basic equipment. Comfortable and efficient transportation is a major problem in geographic field nomadism. There is much to be carried. Our trailers back as intregal parts of the cars, are light in weight, and will carry up to 500 pounds of equipment per unit without seriously affecting car speed or braking power.

In addition to tents, we carried a cot for each individual, a camp stove, a portable refrigerator, cooking equipment, dishes, silverware, plane tables, drawing boards, a camp library, rolls of maps, tracing paper, soil testing equipment, etc. The trailers, as well as camp and professional equipment, were departmental property, acquired thru the years and paid for by student fees and various other field groups. The field group in 1953 added to this equipment at the rate of $2.50 per individual. Each individual was allowed either one duffle bag or one small suit case for personal belongings, one bed roll and in addition one rain coat, one heavy jacket, one dress coat and one extra pair of shoes which were carried loose in the cars. After practice, our time for breaking camp worked out to be about 45 minutes and our time for making camp was 30 minutes. Our record consisted of a camp made and a dinner served in 22 minutes!

Good camp sites are essential for comfortable living in this type of field work. They must have adequate space for tents and camp equipment, toilet facilities or space in which latrines can be constructed, conditions which permit bathing and camp laundering, and they must be within economical motoring distance of the areas to be studied. In the closely settled areas of Southern Ontario, suitable camping places are limited in number and the availability of camping places was a major factor in the choice of areas and topics for intensive study and reconnaissance study. Point Pelee National Park was the base from which we studied the intricate specializations of agriculture near Leamington and the functions and pattern of a city which is primarily a rural service center. From Rondeau Provincial Park, we conducted reconnaissance in a

countryside rich in contrast with that near Leamington and rich in its internal diversity and made reconnaissance urban studies of Chatham, Blenheim and Erieau with emphasis upon the diversity of their urban functions. A township park at Morgan's Point near Port Colborne provided a satisfactory base from which we could study the city and its heavy industries. A privately owned park at Woodbridge near Toronto provided an overnight base permitting full-day reconnaissance in Hamilton and in Toronto. By contrast, in the north country, we selected our areas and topics for study and then found camp sites. Perhaps we were lucky; but every camp during the entire trip had suitable conditions and attractive river or lakeside locations. Ontario has many beautiful camping spots.

At camp sites, one individual acted as camp guard each day in a rotation established by lot. He missed the activities on that day, whatever they were, did camp chores and had some time to work on his own papers and reports or to read from the camp library. The daily routine began about 7:30. We had a substantial breakfast, worked as a group at camp chores, outlined the activities for the day, and were in the field by 9:00 or 9:15. We worked as individuals, as groups, or as a unit, according to the plan which had been announced. Lunches were of the picnic type and were eaten in the field. Usually, we were all back in camp by 5:00, had bathed and had prepared and finished dinner by 6:30.

On some days after dinner, there were formal scheduled discussions outlining techniques to be used in the field and group discussions of various phenomena with which we had been dealing or would deal; but, for the most part, the evening discussions were spontaneous conversations between geographers who had been discovering interesting things. Students generally used some evening time for letters and working on individual reports; but there was time also for horse play, stories, songs and cards. If there were to be no formal group discussions, all individuals were free to leave camp, subject to reporting in and out. If cars were used for personal purposes, the group did not pay for this mileage. These rules and the fun at camp seemed to remove most of the desire to leave camp; altho there were several spontaneous expeditions to see something of special interest which had been discovered by someone in the course of the day. Sundays were free days. For the most part, the group stayed in camp and loafed or worked on individual reports. Each individual was responsible

for a full, written report of the expedition which was to be turned in on the last day of the course. This is an important aspect of camp management. It provided individual work that always needed attention and a cushion of activity for periods of rain and holidays. On one Sunday, the entire group of students requested permission to leave camp to make a reconnaissance expedition which, unknown to them, had been planned for the following Tuesday. We gained a work day! Good camps and packed daily schedules are essential parts of the low cost formula. Luxury is not essential for the maintenance of morale if the entire experience is fun.

Our budget did not allow much in the way of luxuries. After travel expense of $75.00 and equipment expense of $2.50 per individual we had left $67.50 per individual to pay for camping privileges, food and other items of expense. This was $1.67 per individual per day. On some occasions we ate pancakes with maple syrup, fried chicken and steak; but foods like these made occasions. Yet, we had good food and all anyone wanted of it and there was less complaint concerning food than one is likely to hear in most dormitories. This too is an important matter and it has major bearing upon the successful operation of the low cost formula.

THE ACHIEVEMENT BALANCE

The operational matters with which we have been dealing are of no importance for themselves. The low-cost formula is significant only as a method of getting a job done. The job is the important thing and it is a matter of educational development.

Our work on individual days differed greatly; but seemed to fall into four major types: 1. group instruction in such field techniques as road profiling, plane table mapping, soil identification, soil testing, recording field notations with the fractional system, etc., and work by individuals and groups applying these techniques in mapping and interviewing to obtain field data in both rural and urban areas; 2. group trips to industrial plants, mines and distinctive areas of agricultural and non-agricultural use; 3. reconnaissance study and lecture as we traveled from place to place and 4. group discussion of geographic phenomena, geographic techniques and their meanings as problems arose either in the processes of observation or in the writing of reports.

A breakdown of our working time into units of quarter days and a tabulation of time expended in each of the major types listed above indicates that, exclusive of evenings, we spent 12.25 days in

activity 1, 6.25 days in activity 2, 12.5 days in activity 3 and 4 days in activity 4. This totals 35 days, our time exclusive of Sundays, in the field. It underestimates the time actually spent in the type 4 activities because it does not include evening time, Sunday time, discussions which occurred in time that was tabulated as spent on other types of activities and the discussions and work that have gone on since we all returned from the field.

In our intensive work, we studied the countryside near Leamington, identified six types of farms, mapped one or more representative units of each type for land use and environmental conditions, interviewed owners and operators and mapped the occurrence of the six types for an entire township. We mapped and studied urban functions at Leamington, Port Colborne, Temagami, Matheson, Iroquois Falls, Cochrane, Moosonee, Moose Factory and Timmins. These were small places and we did not learn all there was to be learned about them, but for us they are no longer geographical unknowns and what we learned about these spots enriched what we learned thru reconnaissance travel. We think that the results of the 122.5 worker days (12.25×10) were satisfactory in terms of the time expended.

The visits to areas of specialized land use and to factories and mines probably contribute more to general education than to specialized geographical training. Yet, students and professor are likely to be better geographers for having seen 1. a pea viner in operation, 2. primary facilities for marketing and shipping vegetables, 3. the structural mechanism of a large scale swamp drainage project, 4. a food processing plant, 5. coal docks and integrated rail facilities, 6. a fishing base, 7. oil docks, 8. a pumping station on a gas transmission system, 9. lake freighters, 10. canal locks, 11. a cement plant, 12. the world's largest flour mill, 13. the world's largest electrolytic nickel refinery, 14. a blast furnace and pig casting, 15. a limestone quarry, 16. Niagara Falls, 17. the Niagara escarpment, 18. a fruit farm in the Niagara peninsula, 19. an asbestos quarry and processing plant, 20. a woods sawmill and lumber camp, 21. a paper mill, 22. the above ground and below ground operations of a gold mine, 23. land reclamation in the Ontario clay belt, 24. the service base of a major forest district, 25. a lookout tower, 26. a land office serving a frontier of agricultural settlement, 27. the public school headquarters of a frontier region, 28. muskeg, 29. an agricultural island on an esker surrounded by muskeg, 30. a swampy Cree Indian camp, 31. an Indian mission, 32. a Hudson

Bay post serving Indian trade, 33. the northernmost agriculture in eastern North America, etc. We do not regret the 62.5 worker day (6.5×10) spent in seeing these things.

In our reconnaissance work and travel of 2,500 miles, we saw much of the general characteristics, both natural and cultural, in three distinctive geographical regions: Southern Ontario, the southern Laurentian Shield and the northland beyond Cochrane. Wherever we went, we observed and we did concentrated reconnaissance in the farm area near Blenheim in the south and near Cochrane in the north and in Chatham, London, St. Thomas, Welland, Hamilton, Toronto and Kirkland Lake. This reconnaissance helped us to get perspective. What we saw as passers-by was enriched by what we learned in the spots which we were able to study more closely. We found much that was interesting and which we would like to study more thoroly. But the reconnaissance helped us to understand our spot studies more completely and to transfer our knowledge of spots into regional understandings. We would not like to be deprived of the results of the 125 worker days (12.5×10) which were spent in reconnaissance and travel.

The time available for synthesis and discussion was inadequate. We needed more than the 40 worker days (4×10) which were expended for this purpose; but the value of working together on reports of spot studies and reconnaissance studies outweighed the loss of field time. In the future, we will devote more time to this activity.

We do not contend that the things which we did were either more or less profitable than other things that we might have done, but we do feel that field courses should contain some of each of these major types of activities and that student reports should contain sections dealing with each type of activity. The things we did were fun and, in retrospect, there is no doubt that the geography which we learned is more real in our minds and that it will outlast the geography which we would have learned in a similar period of time spent in campus study.

But, there were other values also. There is a very real difference between the problems of teaching techniques in the classroom and in the familiar surroundings near a campus and those of teaching techniques in an unfamiliar location. The use of technique to obtain objectivity in observation and in recording has more apparent value to the student. It transforms the unknown into the known. As a land use and natural complex map develops in an unfamiliar area, the

student experiences the explorer's reward. As one makes interviews and tabulates occupational and other data, understandings dawn. One learns what this place is like and acquires a little understanding of why it possesses these characteristics. Under these conditions, there is immediate value in learning to apply techniques with skill and facility and progress is rapid. At Leamington, in our first week, students had to be shown and told what to do and they operated by rule of thumb; but at Timmins, where they ended their intensive field work, they were able to say these are the things we wish to know, these are the techniques we will employ to obtain the data, apportion the work among themselves and do the job.

The depth of understanding acquired by these students concerning the geography of part of Ontario, the nature of geographic study and analysis anywhere and the use of techniques is difficult to appraise objectively; but they seem to have acquired something that differentiates them from students who have not had the field experiences and they seem to profit from it in their on-campus study.

In evaluating the experience from the standpoint of the institution, one should not pass over the contrast between the relationships of these students, my wife and myself and those which commonly emerge from academic situations. We are friends who have traveled together thru a little segment of life. We dried out together when the storm blew down our tents at Pelee; we sewed until our fingers hurt to repair the tent ripped by the wind; we rode together high on the lift bridge over the Welland at Port Colborne and looked out over the city and the traffic flowing along the lake and canal; we went to a depth of more than a mile below the surface in the Hollinger Mine at Timmins; we went to Moosonee—saw muskeg and muskeg water—the swampy Cree Indians in their tents and shacks; we battled black flies unsuccessfully and patted husky dogs. These are but a few of our common experiences, but they indicate the reason for a basic difference in the student-faculty relationship.

All of these things—the greater depth of geographic knowledge and understanding, the rapid progress in ability to use the tools of geographic investigation and the personal relationships—are parts of a balance sheet report.

These are the results which can be achieved by individual students and by the geography departments of colleges and universities if the low-cost formula is applied to hold the cost of field experi-

ence at the level of on-campus study for both students and institutions. It can be done and it is worth doing.

A NEW CLIMATIC CHART

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There is a need among geographers and climatologists for a composite climatic chart, as complete as possible, on which all elements of weather and climate can be depicted. Charts published to date are lacking in completeness in that only rainfall and temperature data can be plotted on them. Other elements of weather and climate must be shown on separate graphs or not at all. Since sky-cover, barometric pressure and prevailing wind directions are available for first-order weather stations, in addition to rainfall and temperature, there seems no valid reason why all of these elements should not be portrayed graphically on one page. This type of composition aids in a more rapid viewing and correlating of the elements of weather and climate.

On the climatic chart presented with this paper, one may graphically portray sky-cover, rainfall and temperature, barometric pressure and prevailing wind directions. For rainfall and temperature the critical Köppen limits can also be discerned on the chart (Fig. 1). Along the right-hand margin of the chart spaces are provided for pertinent statistical information concerning the climatic station.

SKY-COVER

Sky-cover or cloudiness can be shown on the chart in tenths, or by per cent. Recordings for first-order weather stations are made in tenths, which can readily be converted into per cent of the sky covered by clouds. Plotting of sky-cover is more meaningful than indicating the amount of sunshine. The amount of sunshine which is recorded in per cent of possible number of hours and minutes and in total number of hours and minutes is variable from day to day and season to season. It is also variable in terms of total possible hours and effectiveness, depending on latitude, partial cloud cover and overcast conditions. Another disadvantage to plotting of sunshine is that in spite of rather heavy overcast a considerable amount of insolation may be received thru the medium of

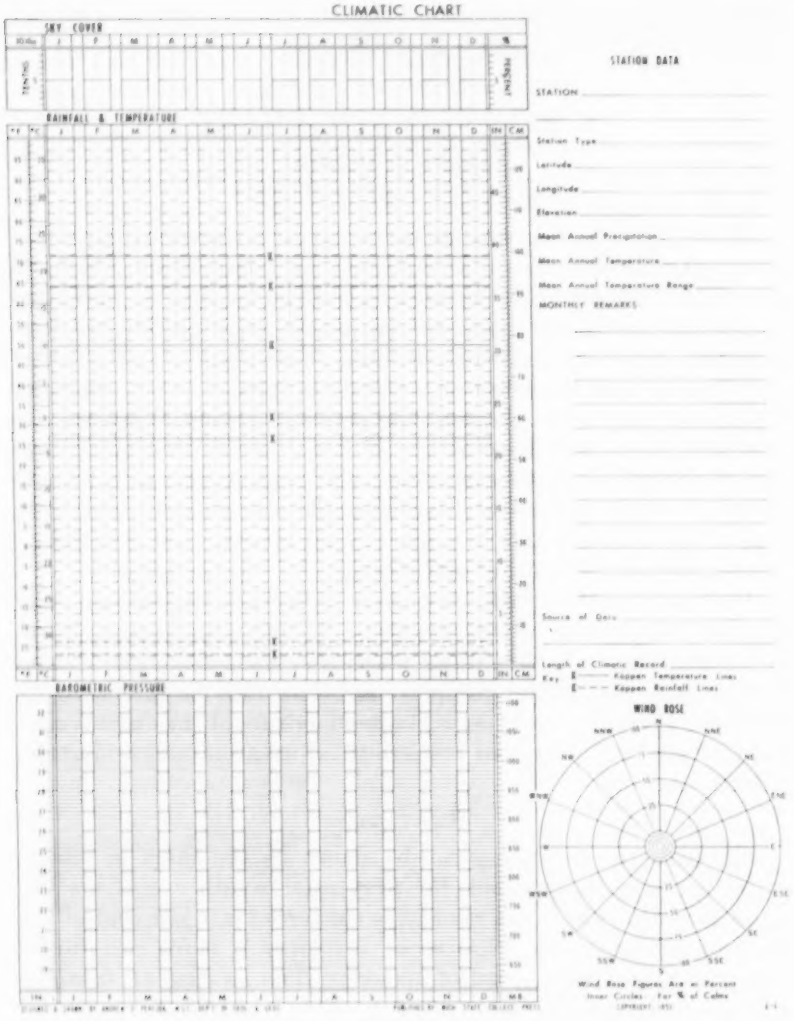

FIG. 1

"sky-shine," yet sunshine records do not take this factor into consideration. In terms of sky-cover, to say that the sky is completely or partly cloudy, or completely or partially overcast is much simpler and indicates that some or no insolation is received. More specifically, to say that six-tenths or eight-tenths of the sky is covered by clouds, or overcast, gives one a better notion of the

actual conditions and effectiveness of the sun, depending on the season and latitude.

CRITICAL RAINFALL AND TEMPERATURE LINES

Two outstanding features with reference to the portion of the chart dealing with rainfall and temperature are the critical Köppen rainfall and temperature lines, and the fact that the monthly columns or bars stand out plainly from one another because the graduations for plotting rainfall and temperature are placed within the chart columns. The temperature graduations pass thru the center of the bars as dots, and the rainfall graduations are placed along the inner side of the borders of the bars. The critical Köppen monthly rainfall limits of 1.2 and 2.4 inches on the chart are shown in broken lines, while the 71.6°, 64.4°, 50°, 32° and 26.6° Fahrenheit temperature limits are drawn as solid lines. The only quantitatively definitive Köppen symbol not represented on the chart is the small "d," which represents the temperature of the coldest month being less than −36.4° Fahrenheit. This line is not on the chart due to physical limitations imposed in the construction of a composite chart that could be reproduced to a size of 8½ inches by 11 inches and still be legible.

BAROMETRIC PRESSURE

In constructing the upper and lower limits of the segment of the chart dealing with barometric pressure, the following factors were taken into consideration: the absolute maximum sea level pressure ever recorded on the earth's surface (1078 millibars[1]), the absolute minimum sea level pressure ever recorded (887 millibars in an extra-tropical storm[2]) and the elevation or altitude of first-order weather stations. On the chart one may plot mean maximum sea level pressure readings up to 1110 millibars or 32.8 inches of a column of mercury, giving a leeway of 32 millibars above the absolute maximum sea level pressure recording. The absolute minimum sea level pressure reading of 887 millibars in an extra-tropical storm does not set the lower limit, but it does indicate that this reading would be lower than any absolute minimum sea level pressure reading of a normal cyclonic center, since pressures

[1] Data by The Department of the Navy, Office of Naval Research, Geophysics Branch. The station at which 1078 mbs. was recorded is Barnaul in Western Siberia.

[2] *Ibid.* 887 mbs. of pressure was recorded in an extra-tropical cyclone on the Pacific Ocean off the Philippine Islands.

in the latter are not as low as in the extra-tropical cyclonic centers. Elevation of climatic stations above sea level was the critical factor in determining the base of the pressure graduations on the chart. An examination of meteorological and climatological data sources indicated that there are very few first-order weather stations above 10,000 feet. Hence, on the chart one can plot pressure data for practically all of the world's first-order weather stations, since the barometric graduations on the chart go as low as 610 millibars or 18 inches of a column of mercury, which is sufficient up to 13,380 feet above mean sea level. It is important to note that the lowest barometric pressure recorded (reduced to sea level) is much higher than that recorded on a routine basis (known as station pressure and not reduced to sea level) at such elevated stations as may exist in high mountains like the Alps, Himalayas, or the Rocky Mountains. Another consideration in the reduction of pressure to a standard datum level is that of gravity, which is variable with latitude and altitude. Pressure readings are normally reduced to a standard gravity of 45° latitude. This correction is normally less than one part per thousand, and therefore is generally neglected in most cases.

The barometric chart has value in that one can plot the mean monthly pressures, the mean absolute ranges for the individual months, or both. In the case of the mean absolute ranges for the months, this can be accomplished by shading in the monthly bars between the mean maximum and minimum pressures observed during each month, while the mean monthly pressure can be shown by a line connecting the individual monthly readings.

Wind Direction

The plotting of prevailing wind directions on the chart can be done for 16 directions of the compass, on a percentage basis. Normally, the data for these 16 directions provided in the meteorological summaries are tabulated by numerical frequency and velocity, with totals given at the bottom of each column, that can be readily converted into percentages. The prevailing wind direction percentages on the chart commence at the zero circle which is also the 100 per cent circle for indicating the percentage of calms. The first three circles starting at the center of the wind rose chart, which are used as guides for plotting calms, represent 25, 50 and 75 per cent of calms, respectively. The prevailing wind

percentages which can be shown by dots on the 16 compass direction lines, can be connected with a heavy line for emphasis. The percentage of calms can be indicated by a circle which can be shaded for emphasis.

GEOGRAPHIC FACTORS IN THE EVOLUTION OF CALIFORNIA*

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The early development of California grew out of Spain's New World discoveries in the sixteenth and seventeenth centuries, and later the necessity for planting settlements to hold the exposed northwest frontier of Mexico. But more than two centuries elapsed between discovery and the beginning of colonization. Another century passed before isolation was broken down sufficiently to link California with the rest of the United States. That date was 1869 when the last spike was driven, uniting the Central Pacific and Union Pacific railroads.

REMOTENESS OF EARLY CALIFORNIA

Isolation is the keynote of the first centuries of California's development. Early maps were not wholly incorrect in depicting California as an island between "the untenanted wastes" of the Pacific and the rugged, impassable lands to the east. Alta California was discovered and opened up from Spain's base in Mexico. But the way northward was "long and vexatious." Beset by conflicting sea currents and shifting winds, by fog and storm and dearth of food and water, the frail ships made slow progress. The earliest European contacts by sea witnessed slow, uncertain advance, then retrogression, if not complete eclipse of the area that lay on the dim northwestern horizon of New Spain. An early observer records that "California presents to the sea a frowning face."

Overland approaches led thru rugged, difficult country, a seeming endless succession of mountains and deserts. Navigable rivers were few. It was difficult to live off the country. The bounty of California's present food supply is a far cry from the niggardly natural endowment of early days. The native Indians did not practice agri-

*Paper presented before the National Council of Geography Teachers annual meeting in San Francisco, California, August 19-20, 1954.

culture, but were simple food-gatherers. In all, Alta California offered slight promise as an area for future expansion. One does not wonder that after Vizcaino's voyage along the coast in 1603 this distant land was shrouded in oblivion.

Beginnings of Settlement

Toward the middle of the eighteenth century, Spain was suddenly stirred by rumors of imminent encroachment by other European powers upon this Pacific littoral which she claimed by right of discovery. Plans immediately took shape for securing this critical frontier of Mexico. The plan of settlement eventually carried out included the establishment of presidios, pueblos and missions: presidios to guard strategic coastal positions, pueblos as communities of farmers to supply food for the soldiers and missions where Indians could be taught useful arts and be converted to Christianity. In 1769 the first European settlement, San Diego, was planted in Alta California, and by 1823 twenty-one missions were spreading their influence thruout coastal valleys as far north as Upper San Francisco Bay.

The significance of the first period of colonization was far-reaching. Around the missions and the two pueblos, San Jose and Los Angeles, cultivation began. The early settlements occupied the choicest lands in coastal areas in close proximity to sources of timber and to the streams that cross the fertile lowlands. Under climatic conditions reminiscent of the Mediterranean homeland of Father Junípero Serra and other leaders, agriculture was reasonably successful. The grape and olive, introduced from southern Europe, demonstrated their adaptability to the soils and climate of California. Natural pasturage in plains and foothills supported cattle and sheep, laying the foundation in later decades of animal industries that dominated the simple economy of the area. Communities that grew up around presidios and missions as at San Francisco, Monterey and Santa Barbara had a continuous existence and to the end of the first century recorded a slight net gain, altho progress was intermittent and slow by modern standards.

The Rancho System

In 1822, Mexico declared her independence; she took over the administration of California, altho her grip was never secure and her control of provincial affairs was weak. Sentiment was growing that the vast land holdings of the missions should be returned to the

public domain. When the secularization of mission lands was carried out in 1834, vast acreages became available for distribution to residents of the province. Mexican law fixed the *minimum* size of a land grant at one square league (4500 acres). Between 1834 and 1846 at least 700 private rancho grants were confirmed; as a result, most of the desirable, accessible land of California at the time of the American occupation was in private ownership.

The rancho system had far-reaching effects on the California of later decades. It affected the type of agriculture, social progress, land titles, the location and growth of cities, and proved to be, as Cleland observes, "the most important legacy inherited from Spain and Mexico." Stock raising which had flourished in the mission period became "the center and circumference of California life." Cattle supplied the chief source of food and was the mainstay of trade and wealth. Natural conditions were ideal: winters were mild; rains in early autumn stimulated the growth of native grasses and in good seasons kept the pastures green well into summer. The rainless season cured the nutritious forage, thus insuring year-round pasturage. Limitless unfenced ranges supported "cattle on a thousand hills." The great ranchos of early California were more or less self-sustaining; life was unhurried. It was a time of Arcadian simplicity, a period of serenity and calm.

As early as the 1820's, and increasingly numerous in the thirties and forties, travelers began to arrive by overland routes. They blazed the earliest trails between the western American frontier and the Pacific coast. Fur traders, adventurers, military parties and a few home seekers slowly worked their way over plains, mountains and deserts, finally scaling the Sierra Nevada and the coastal ranges in the south. These groups were the vanguard of the great migration of 1849.

Effects of Gold Discovery

The discovery of gold in January, 1848, was the event that jolted California into activity. Marshall's discovery on the South Fork of the American River was perfectly timed to attract to California restless individuals ready to participate in the general westward migration. President Polk's message to Congress in December, 1848, confirmed the discovery and started the stampede. Barriers that had long isolated California began to crumble.

Disregarding the value to California of the gold recovered which totalled $218 million thru 1852, the Gold Rush brought thousands of

people into the territory and "accelerated the change from Mexican to American society" owing to the predominance of persons from the United States. In the spring of 1846 the estimated population of California was 10,000 persons, exclusive of Indians. In 1853, the number rose to 250,000. Settlements sprang up all along a narrow belt at the west base of the Sierra Nevada from Oroville to Mariposa, the so-called "Northern Diggings" and the "Mother Lode." The great migration also stimulated settlement of the Central Valley: Sacramento and Stockton as outfitting towns near the mines experienced an impetus substantial and permanent. But the transformation of San Francisco was spectacular. From the small adobe village of Yerba Buena, the community within two years became a city of almost 40,000. In its harbor rode ships from every quarter of the globe. It was the leading center of commerce and exchange.

California in Transition

By the treaty of Guadalupe Hidalgo, California was annexed to the United States and two years later (1850) was admitted to the Union. Social and economic changes continued revolutionary. Gold mining declined after 1852, but already in Central California economy was shifting from exploitive to a planned development of resources. Prior to the Gold Rush, Californians passively skimmed the cream in utilizing surface riches. Thereafter, diversification appeared: hard rock and hydraulic mining, lumbering in the lower Sierra, the building of water systems (at first for mining operations, later for irrigation), manufacturing to supply the needs of the growing population and a lively commerce moving in and out of San Francisco Bay. Most significant in view of its future development was the expansion of agriculture, stimulated by the enormous demand for food.

During the Gold Rush Southern California lagged far behind the north in all aspects of development. Favored by a "no-fence law," the raising of cattle continued to hold a paramount position. Beef, sold in the north, brought a measure of prosperity, but adverse conditions conspired eventually to terminate the economy associated with the rancho system. The federal Land Act of 1851 challenged the titles of land grants awarded during the Spanish and Mexican regimes. Rancheros were forced into bankruptcy or lost their lands. Then came a succession of natural disasters. Following a season of widespread floods which destroyed thousands of cattle, a series of

dry years from 1862 to 1864 burned up grass and dried up streams and springs. An invasion of locusts swept the land and a plague of smallpox decimated the population of the southern "cow counties." Property values collapsed, paving the way for further subdivision of the large land holdings. The era of the ranchos came to a close.

A new migration set toward Southern California following the close of the Civil War. Several agricultural colonies were established. Citrus and deciduous fruits grown under improved methods of irrigation began to assume importance. But not until railroads provided means for rapid shipment of produce to eastern markets did intensive fruit production become general. The extensive growing of wheat and the raising of sheep bridged the gap between the cattle era and the present period of highly intensive irrigated agriculture, certainly a feature which characterizes the State's present economy.

THE TWENTIETH CENTURY

The half-century, 1900 to the present day, shows a development in California not unlike the changes and trends noted in the United States as a whole. The total population has increased; urban population has shot up. Improvements in all means of transportation and communication have reduced isolation and have, thereby, altered the peripheral situation of the State. Agriculture has expanded and has become better adapted to conditions peculiar to California. Manufacturing as an employer of labor is challenging the deeply-rooted farming industry. The expansion of trade is uniting the state with other areas in this country and abroad. A product of burgeoning economy is the increasing concentration in California of cultural institutions and cultural facilities.

The last decennial census showed that California is now second only to the state of New York in population. From a total of 2.5 millions in 1900, the number of inhabitants rose to 10.5 millions in 1950, registering a net gain of 3,679,000 or 53 per cent between 1940 and 1950. The reasons for this large increment are manifold: first, population during this period moved westward and cityward. In addition, opportunities in agriculture and particularly in war-swollen industries attracted new residents. Moreover, the drawing power of a mild climate, the allurements of informal, outdoor living and the thrill of participating in the building of an area still young doubtless motivated many of the incoming thousands.

Significance of Agriculture

Farming areas received their share of the immigrants, thus reinforcing the labor supply which helped the state to maintain leadership as first in the value of farm crops in the United States. Nearly 9,000,000 acres are now planted to crops, a high percentage of the total area when one considers the mountainous nature of much of California's land surface. Irrigation, practiced on 6.5 million acres, is a prime requirement owing to low annual rainfall and summer drought. The reservoir, aqueduct and ditch are repetitive elements in all crop lands in the State. West-flowing Sierran streams and the Sacramento river are sources of irrigation water for the heartland of California, the Great Valley, while the controlled Colorado supplies desert lands in the Palo Verde, Imperial and Coachella valleys. The Owens and Colorado rivers supplement local supplies in southern coastal areas.

California's agriculture is highly intensive, highly specialized and is predominantly commercial in type. Every crop that can be grown in the latitude is grown here, and with few exceptions, grown commercially. In fruits, nuts, truck crops, olives, grapes and wine, California is a natural leader. Certain new crops as cotton, rice, dates and avocados are growing in importance. High standards of production and marketing, cooperative organizations and persistent advertising help in meeting competition. The home market is an absorptive one requiring several food imports. Nevertheless, the preparation of foods for exportation is a leading industry. It should be noted that present areal patterns are changing as urban and suburban uses encroach upon lands formerly in farms.

Growth of Industry

But no field of California's economy has experienced more spectacular changes in recent decades than has industry. From an industrial production for local consumption only, California is now selling in national and foreign markets. Certain conditions long retarded industrial development: deficiency of fuels and industrial raw materials, a small and scattered population with limited buying power and little capital, and remoteness from the populated areas of this country. World War I stimulated shipbuilding and aircraft construction. At the same time petroleum and natural gas fields came into production, creating a new and important industry and providing fuel for a variety of manufacturing plants. An influx

of population expanded the labor market. The opening of the Panama Canal (1914) and the improvement of harbors facilitated the assembling of industrial materials as more and more capital gravitated to California.

The foundations thus laid in the twenties were adequate for the superstructure which rose in the active years of World War II. California became the leader in the aircraft industry and forged ahead in many categories connected with national defense. Large blocks of hydroelectric power were generated in the Sierra Nevada, at Shasta Dam and at Hoover Dam and became available to the California power market. Steam electric plants in the vicinity of San Francisco Bay and in the Los Angeles area have added further to power supply. The immediate market that the state affords is incentive in itself for expanded industrial development.

The production of motion pictures begun in the present century still ranks high among California industries. The refining of petroleum products, the production of lumber, the working of varied saline deposits and fish-canning utilize local resources. But shipbuilding, aircraft manufacture, the machinery, furniture and apparel fields must depend, at least in part, on imported materials, related to improvements in transportation facilities. Automobile assembly, tire manufacture and many others are related to local demands and to the high purchasing power of California buyers.

Economic development has placed great strain on the State's water resources. Demands for water have necessitated tremendous shifts from areas of surplus to areas of deficiency; witness the great municipal aqueducts: the Central Valley Project, the All American Canal and the Colorado River Aqueduct, the latter serving a large part of Southern California. Enlargement of industry is intensifying problems of atmospheric pollution, sewage disposal and particularly of transportation and traffic.

Overcoming Effects of Isolation

Great improvements over the old days have been made in transportation. Four transcontinental railroads now enter California. Highway extension and improvement proceeds apace. Five major airlines and foreign carriers serve the larger cities. The improvement of harbors as at Oakland; the deepening of the San Joaquin River to the port of Stockton, and of the Sacramento River; the creation of new ports as at Los Angeles and Long Beach bring Cali-

fornia into contact with the world. Even the bridges uniting peninsular San Francisco with its tributary areas is at last overcoming local isolation.

The present century has witnessed manifestations of culture as outstanding as the material advances. In the two large metropolitan areas cluster universities, technical institutions, observatories, libraries and art centers. Today the San Francisco Bay and Los Angeles areas are termini of continental trails. They stand also at the beginning of trans-Pacific routes. From a peripheral position on the margin of an uncharted sea, California's situation has become a transit one.

Miss Semple noted that concentrations of culture were features of the commercial cities of the early Mediterranean area. It was in the wealthy ports of the Midland Sea that centers of learning and cultural leadership developed "for here the currents of thought flowed full and fast." Once the fetters of natural barriers and economic retardation were thrown off, an energetic population aided by the rapid advancement of scientific knowledge enabled California to forge ahead and become a progressive American state.

A GEOGRAPHIC MATERIALS STRIP

THOMAS FRANK BARTON
Indiana University

Do you believe that children learn by doing? Do you use the experience-activities-workshop method of teaching? If so, to have the children make a scroll geographic materials strip is an activity which offers many opportunities for learning thru doing and correlating subject matter and skills. A scroll materials strip is nothing more than a long piece of paper containing a succession of frames with words, pictures, maps, etc. In addition to learning by doing, pupils working on a materials strip become more appreciative, form better impressions, and may become constructively critical of content of both filmstrips and motion pictures.

The writer believes that this type of activity should be a prerequisite to the extensive use of either strip or motion films. Would not the logical and psychological order of introducing these three tools be as follows: 1. pupil materials strips; 2. commercial filmstrips and 3. motion pictures? If the children in the first six grades have already been shown commercial film, they still should have

an opportunity to help make a materials scroll. This type of activity is essential if we are to have classroom filmstrip reference shelves for individual pupil use.[1]

INTRODUCING THE IDEA

As we all know, it is difficult to "spell out" exactly the blueprint each teacher may or will use to stimulate pupils in making a materials strip. In some classes the idea may originate with the evaluation of commercial film. During a class discussion the need for additional frames, or a different sequence of frames, or the need of a film to show local conditions may bring forth the idea of planning the ones teacher and pupils would like to have. If some pupil objects to such a theoretical approach as planning the possible construction of a filmstrip, the teacher may suggest that the class make its own. The teacher should have a scroll to show the pupils how one is read and made.

PLANNING THE ACTIVITY

Before construction begins, there should be class discussions and perhaps committee assignments concerning the mechanics of the project. For example, how big should each frame be? Should it be 12 inches high and 18 inches long or 16 inches high and 22 inches long, or 20 inches square? In order to gain experiences on which to base their opinions, the teacher may have the pupils use sheets of various sizes in other work before this activity is undertaken. Or, she may just select the frame size for the first scroll.

What factors should be considered in deciding the size of the frame? Generally, the younger children will need larger frames if we consider the problem of their physical development and growth. The teacher and the children must realize that the size should be large enough for their handmade sketches, printing, tracings, etc. Their pictures are not to be run thru a commercial machine and magnified, consequently they must make the content in the frames large enough to be seen from a distance of about 10 feet. The class should consider that, generally, the larger the frames the fewer the number there will be for the pupils to work on at one time because of the limitation of table space (unless individual frames are to be fastened to the scroll).

[1] Thomas Frank Barton. "Are We Adequately Utilizing the Geographic Filmstrip?" The JOURNAL OF GEOGRAPHY, Vol. LIII (April 1954), 171-178.

After deciding on the size of the frame, the mechanical operation of the projection box comes next. The scroll may be run thru the box vertically as in a commercial filmstrip projector or horizontally. Operation in either direction has advantages and limitations. Once the frames have been placed on the roll of paper to accommodate one of the two movements, a change cannot be made to the other unless another scroll is made.

Where one has not had experience with scroll projection, it might be well to make the box before the scroll. Then cut the paper and run the strip thru the projector before filling the frames.

Planning also involves the problem of the potential number of frames, what their content and sequences should be and who should work on each frame. As nearly as possible, pupils should be assigned to the work in which they are interested and capable of turning out a commendable piece of work. Some can draw well, others may print well and still others, trace maps. Again, more than one pupil may work on the content of one frame.

In order that it may be completed in a comparatively short time, the first scroll "filmstrip" should be kept short and relatively simple. In this way, pupils have the thrill of completing and viewing their work. Insistence on near perfection should not be permitted to spoil the activity. If a frame on the scroll is damaged, cut it out and splice with "Scotch" tape. Also, splicing permits one to add frames. If your school has a map edge binding machine, you may wish to cut the strip up into frames for individual desk work. Then rejoin the frames with the edge binding material and/or "Scotch" tape.

Constructing the Scroll "Projector"

A committee of pupils or the teacher may construct the scroll projector. An inexpensive one may be made from a heavy cardboard box. If an 18-inch high by 22-inch wide frame is used and the scroll is to be rolled horizontally, a box 20 inches high and 24 inches wide is recommended. The frames should be one to two inches smaller in dimension than the opening or "screen" of the box.

Place the box on its side. Bend the end covers into the box and fasten them down so a double thickness results. Either bend and fasten the side covers in or cut them off. Now cut vertical slots in both ends (the ends are now the vertical sides) in corresponding positions. These slots should be made about 1.5 inches from the

front of the opening. They may be .25 or .5 of an inch wide and 20 inches high. Now it is possible to thread the paper thru the slots (and after fastening a rod to the threaded end) one may wind the scroll first in one direction and then the other. For a more permanent projector, one may be made of wood.

If the pupils wish, the sides, top, back and even bottom of the box may be covered with some decorative paper.

CONSTRUCTING THE SCROLL

Cut the roll of paper the right width and length and divide it into frames. Some people place the frames side by side and others leave an inch between each for better projection. If the frames are to be 23 inches wide, the film is to contain 10 of them with an inch between each, and a leader of 12 inches is left at each end of the strip, then a roll of paper 263 inches or about 22 feet long will be needed. A roll of paper a yard wide and 12 feet long may be cut in half lengthwise and spliced to get a 24 foot strip 18 inches high.

Now that the scroll is ready, pupils can trace diagrams, sketches and outline maps. They may draw free hand and print. Pictures cut from magazines and other sources may be mounted with rubber cement in the frames. Whatever is placed in the frames should not be too stiff to prevent the paper from rolling easily nor should the picture be so loosely fastened that they will come off.

SHOWING THE SCROLL

The scroll is threaded thru the slots and in operation unwinds from one roll and on to the other. Each end of the scroll should be fastened between two soft pieces of wood and these tacked together. The bottoms of the sticks may extend an inch below the edge of the scroll but the upper end may well extend six to 12 inches above the paper so the persons turning the roll may grasp the sticks with both hands.

To hold the lower end of the scroll rods a small board several inches wide and eight or 12 inches longer than the "screen" or opening in the box and about .5 of an inch thick may be placed under the box. Two or three inches from each end of this board, bore two holes large enough to hold the end of the scroll rods. A similar board may be placed across the top and these two fastened together with short boards. Such an arrangement will keep the scroll rods from slipping around as the roll is turned.

The scroll may be shown in a darkened or undarkened room. In a darkened room a beam of light is flashed on the strip.

Dual Function

If horizontal construction is used, the scroll may serve the dual function of materials strip and frieze. First, use the scroll as a moving visual aid; then as a frieze at the standing eye level of your pupils. After using the same scroll for 10 days or two weeks as a frieze, again use it as a moving visual aid. Alternating the use of the scroll as a materials strip and frieze will help the pupils gain more vivid impressions of the importance of such things as 1. the sequence or order of frames, 2. the content and quality of each frame and 3. the general theme. Thru this method of dual use they grasp more easily the idea that each frame is related to those that precede and follow. They are more able to understand the importance of the content of each frame to the entire theme or story of the strip. Assuming equal quality, a series of pictures is only superior to the same number of pictures shown in a haphazard way, if the series in their interrelatedness produce additional basic concepts.

Because of the importance of the interrelatedness between frames and the possibility of pupil accidents, teachers may prefer to have the pupils work on individual sheets of paper the size of the proposed frames rather than directly on the scroll. After the frames are finished, the pupils may wish to arrange and perhaps rearrange their materials until they decide upon a proper order or sequence. Then the frames may be fastened in this sequence to the scroll by means of "Scotch" tape.

Conclusion

If properly used, the geographic materials strip can make a major contribution to our visual aids program and add variety to our teaching methods. Is this type of construction activity not a prerequisite to a more effective use of commercial film?

The Forty-first Annual Council of the National Council of Geography Teachers will meet in Indianapolis, Indiana, November 25 and 26, 1955.

THE NATIONAL COUNCIL AT WORK

From time to time it is desirable for us to examine, as a whole or in part, the Constitution under which our organization functions. To draw special attention to that part of the Constitution regarding membership there follows a quotation from the By-Laws, Article 1, Sections 1, 2, 3, 4, and 5.

ARTICLE 1. CLASSES OF MEMBERSHIP

"*Section 1.* The membership of the National Council of Geography Teachers shall consist of Members and Fellows as follows:

Section 2. Annual Members. Any teacher of geography or any person or institution interested in geographic education may become an Annual Member of the National Council of Geography Teachers, by submitting to the Secretary, or Business Office, a properly executed application blank, together with dues for one year.

Section 3. Contributing Members. Any person may become a Contributing Member of the National Council of Geography Teachers through contributing to the financial support of the organization's work in the amount hereinafter specified.

Section 4. Honorary Members. The Executive Board may provide for the election of Honorary Members under such conditions as it shall determine.

Section 5. Fellows. Any member in good standing for five consecutive years shall be designated as a Fellow of the National Council of Geography Teachers."

At the annual meeting of the National Council of Geography Teachers held in San Francisco, California, August 19 and 20, 1954, the Executive Board authorized a special subscription rate for students. While this special rate does not include membership in the National Council of Geography Teachers it does give the student the nine issues of the JOURNAL OF GEOGRAPHY each year, thus making it possible for him to become acquainted with the National Council and its activities. The student subscription rate is **$2.25** for a group of five students sent to one address. The Executive Board hopes that teachers will introduce their students to the National Council of Geography Teachers by promoting student subscriptions.

The names of the Contributing Members for the year 1953 and 1954 are given below:

CONTRIBUTING MEMBERS

Mamie L. Anderzohn
Wallace Atwood, Jr.
Thomas F. Barton
Nels A. Bengtson
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Katheryne T. Whittemore
Elizabeth Zachari
Rose Zeller
Norah Zink

Since the publication of the last list of members who have attained the status of *fellow*, nineteen members are now added to the list. They include the following:

November 1954. Katherine Durvan, Ollie Green, Flora Belle Faddis, Laura Meyer, Dr. Frank E. Sorenson, Mrs. J. C. Bergeron and George Winsor.

December 1954. Robert E. Morgan, James Jennings, Emily H. Baker, Howard B. Rice, Dick T. Shank, Sister Mary Clare Assisi, Edward L. Meade and Dr. George Hoffman.

January 1955. Lawrence H. Sommers, J. S. Cloyd, Francis Shadegg and Paul Sisco.

INA CULLOM ROBERTSON, *Secretary*

THE AAG AT MEMPHIS

The Association of American Geographers will hold its fifty-first annual convention at the Hotel Peabody in Memphis, Tennessee, from Monday noon thru Thursday, April 11-14, 1955. The host institution is Memphis State College, and Professor R. W. Johnson is chairman of the Committee on Local Arrangements. The Program Committee is under the leadership of Professor George B. Cressey of Syracuse University. The meetings are open to all friends of geography, whether members of the Association or not.

In addition to a large number of papers covering the whole range of geography, there will be special sessions on the Memphis Area, Political Geography, and Applied Geography. The College will provide a complimentary tea each afternoon, and there will be a coffee break each morning. The Banquet will come on Wednesday evening with Professor Derwent Whittlesey of Harvard as the speaker.

The program includes three afternoon field trips. On Tuesday there will be a 120-mile tour of the Loessal Bluffs and Yazoo Basin. Advance registration with Professor Johnson is necessary. The Wednesday afternoon trip will cover 90 miles thru Memphis and the Wolf River Watershed. On Thursday, the tour will visit Horseshoe Lake and Crowley's Ridge, a 140-mile trip.

A new feature of the meetings will be a series of open meetings of various committees of the Association, and two periods devoted to informal discussions covering various regional and topical interests.

Hotel reservations may be made at Hotel Peabody, the headquarters, or at Hotel Tennessee, across the street. Other nearby hotels are the William Lea, Gayso, Chisca, Claridge and King Cotton, or at the YMCA and YWCA.

Syracuse University GEORGE B. CRESSEY

GEOGRAPHICAL PUBLICATIONS

Atlas Estadistico de Costa Rica. Direccion General de Estadistica y Censos, Ministerio de Economia y Hacienda, San José, Costa Rica, 1953. 114 pages, maps and text. $3.50.

Costa Rica has published the first of the national atlases based on the census of 1950. A series of such atlases, at least for the Central American countries and possibly for some parts of South America, was promoted by the Division of International Statistics of the United States Bureau of the Census. Alford Archer was employed as a technical consultant on the project.

After a brief preliminary discussion of the reading of maps and the use of scales and legends, there are several pages devoted to maps of Central America as a whole. These pages will appear in each of the Central American national atlases. They include a surface map by Raisz, and maps of population density, climates (after Köppen) and natural vegetation. Most of the maps, however, show only Costa Rica. They present a

great variety of information: the vegetation, the rainfall, the climates, the population (by dots and by categories of density, by rural and urban categories), movements of people and a variety of demographic characteristics. The agricultural maps show the patterns of land tenure, the crops, agricultural regions—mostly with dots. There are maps, graphs and tables, along with a text, describing the foreign and domestic commerce of the country. There are large-scale maps of the capital cities of the seven provinces of Costa Rica. There are numerous tables giving a variety of geographical and economic data.

The Atlas of Costa Rica is a most important publication. It presents in a form most useful to geographers much information not readily available in any other form. It should prove helpful in the schools of Costa Rica where it is planned as a basic text for the teaching of geography. Not the least of its value is that it preserves many data gathered in the census of 1950 which might otherwise remain unpublished and might eventually be lost.

Syracuse University PRESTON E. JAMES

Oxford Economic Atlas. Prepared by the Economic Intelligence Unit and the Cartographic Department of the Clarendon Press, Oxford. 1954. vii and 245 pages. $4.80.

The Oxford Economic Atlas is a handy, compact, reference book (8 x 10 inches) with 113 pages of maps and graphs and 132 pages of statistical information arranged alphabetically by countries. The economic section is preceded by maps of world physical conditions and physical-political maps of the continents. The Oxford projection is used for all world maps and is either of a 1:65 million scale (single-page size) or 1:100 million (double-page). Agricultural production is portrayed by dot maps using 1948-1950 data. Each map is accompanied by tables of current and prewar production of major producing countries and a brief résumé of crop requirements. For some crops comparative yields are given. Mineral production and manufacturing are portrayed by comparative circles for producing districts or countries and use 1949-1951 data. A tabular comparison of pre-war and post-war production is shown. Explanatory material may include principle uses of the commodity and for development of the industry. Transportation and population maps are included.

The statistical gazatteer gives general information on area, population, national income, transportation, trade, etc. for each country. In each case this is followed by sets of tables (not more than 10), which list average annual production, imports and exports of selected items.

The book contains a mass of basic information about world economics. It should appeal to geographers, economists and others interested in trade, industry or agriculture. It is, in brief, a handy reference book.

University of Illinois, Chicago ALDEN CUTSHALL

Kathleen Monypenny. **The Young Traveler in Australia.** Young Traveler Series. E. P. Dutton and Company, Inc., New York, 1954. 223 pages, $3.00.

The experiences of an American family with teen age children during a year in Australia are the subject of this junior high level travel book.

In telling the story of life in her land this Australian writer talks of the problem of dryness; of the great distances between main centers and the outback; of life on large stations, in irrigated areas and in cities. Interwoven in these accounts is much geographical information and a historical background. One can obtain from this something of the "feel" of the country and learn of the attitudes and interests of these friendly, informal and easy going people.

This story includes descriptions of Perth and other parts of the Southwest, Adelaide

and a trip upstream on the Murray, Melbourne, life in Sydney, trips to and stays at two stations in inland New South Wales and travels north to Brisbane.

The incongruous parts of the book are those sections written as letters by the American parents to their children in Sydney and conversations of the family all of which use typical Australian expressions rather than American ones. It is also impossible for an Australian who does not know the United States to record very accurately the impressions of Americans visiting that land. Our ideas of comforts and conveniences alone are quite different.

Despite the criticisms above, this book is certainly one of the best accounts available on Australia for young people.

University of Minnesota LYDA BELTHUIS

Ruby M. Harris. **The South: Resources and Manufacturing Industries,** filmstrip. Society for Visual Education, Chicago, Illinois. **$6.00.**

The filmstrip covers a wide range of southeastern activities, from those of the extractive type (such as logging and turpentining) to the complex of the urban centers of several southern cities. The coverage geographically is a wide one, from scenes on the Atlantic Coastal Plain to the dry western plains of Texas; some will undoubtedly suggest that Virginia might have been included and the "western" scenes of west Texas excluded.

The views and captions proceed from the simple to the complex and provide an excellent coverage of a large region. To those who know at first-hand the extent and diversity of the South, the wide array of features covered in the filmstrip is amazing. Forest resources, minerals, power and agriculture are all treated. Emphasis is given to the manufacturing and the cities of the "New South" and the resource base upon which these depend. No emphasis is accorded the factor of population distribution, nor the large supply of potential factory workers.

The filmstrip is well suited to the promotion of a lively classroom discussion. Particularly will this be true in "the South" where the geographical diversity is so great that students in one area are completely unfamiliar with "southern" landscapes and activities elsewhere in the section.

University of Tennessee LOYAL DURAND, JR.

George R. Stewart, ed., **The Opening of the California Trail: The Story of the Stevens Party from the Reminiscences of Moses Schellenberger.** University of California Press, Berkeley, 1953. lx + 115 pp. **$3.75.**

The title of this handsomely printed book—*The Opening of the California Trail*—is highly significant. By its use editor George R. Stewart has credited the so-called Stevens Party of 1844, rather than preceding immigrant parties, with the discovery of the important western section of a practical wagon road to California. When in 1864 a writer for the San Francisco *Call* attempted to grant similar credit to the Stevens Party, the matter was curtly dismissed by the historian H. H. Bancroft with the remark: "The writer [of the *Call* article] supposes Stevens' to have been the first party of immigrants that came overland!"

There is a reason why Bancroft belittles the Stevens Party by allotting it less than three full pages in his seven-volume *History of California* (IV, 445-48). The one and only manuscript record relating to the Stevens Party was not available to Bancroft in time for incorporation or use in preparation of Bancroft's volume dealing with overland parties. Moreover this important original manuscript known as "Moses Schellenberger's *Overland in 1844*" was prepared for Bancroft, but it became lost. All that remains today is a purported version of the Schellenberger narrative which was edited by Horace S. Foote and published in 1888 in a biographical work called *Pen Pictures*. Mr. Stewart

asks the obvious question: "What relation, if any, does this account bear to the original manuscript that was prepared for Bancroft?" The answer to this question, with facts and close reasoning to support it, is: the article published in *Pen Pictures* is chiefly based on the original manuscript, "Overland in 1844." It is because of sound conclusions reached that the editor and Friends of the Bancroft Library justify publication of the present volume *The Opening of the California Trail* as being "The story of the Stevens Party from the reminiscences of Moses Schellenberger as set down for H. H. Bancroft about 1885, edited and expanded by Horace S. Foote. . . ."

Only by reading Mr. Stewart's 42-page introduction can one approach "Overland in 1844" with the reasonable assurance that we have here the substance of the original Schellenberger narrative. And once having accepted the version on said basis, we may read with renewed interest and edification the fascinating account of 51 men, women, and children—one of whom was Moses Schellenberger—who in about eleven wagons set out from Council Bluffs for California in company with a larger Oregon-bound party. Under the captaincy of Elisha Stevens, the two parties parted company at Fort Hall, and from there on the Stevens Party made its way across the already familiar Humboldt Sink. From this point on—namely the trek across Truckee Pass, by Danner and Tahoe Lakes, and down the American River to Fort Sutter—was the blazing of what was to become the most generally followed overland trail to California. Many places described in the narrative can be readily identified, and the editor has included appropriate illustrative material. And quite apart from crediting the Stevens Party as the openers of a practical wagon trail across the Sierras, the intensive human drama contained in this narrative gives it an important place among the great mass of overland journals.

OSCAR OSBURN WINTHER

Indiana University

P. R. Heaton, **The Geography Room in a Secondary School.** A publication of The Geographical Association, c/o The Park Branch Library, Duke Street, Sheffield 2, England, 1954. 20 pages, 6 drawings, 5 photographs, references. 40 cents.

The purpose of this study is well stated in the following excerpt from the preface: "New types of equipment and new building materials have been devised; new emphasis on the use of visual aids has become accepted; new types of schools and school buildings to meet new educational needs are in the process of planning or building. In these circumstances it is essential that teachers of geography should be ready with a clear and considered statement of their requirements in terms of present opportunities."

After discussing a desirable size (900 to 1000 sq. ft.) for such a laboratory, and the aspect (if possible to the south for sun observations), the author deals with Lighting, Equipment and Layout, Projection Facilities, Working Space and Storage Space. The booklet is well illustrated with drawings showing the use of classroom space and with photographs of classrooms where equipment and storage have been placed advantageously.

Since additions or new buildings are contemplated in many high schools in the United States, teachers who are confronted with requests for specifications for a geography room will find this booklet helpful in giving them ideas or in confirming their own ideas of requirements for such a classroom.

"The first specially built geography room in Britain was completed in 1914." The long experience of geography teachers in Britain with this problem makes the recommendations in this booklet particularly valuable.

ADAH FLEMINGTON

New Trier Township High School
Winnetka, Illinois

William D. Thornbury. **Principles of Geomorphology.** John Wiley & Sons, Inc., New York, 1954. 618 pages, 275 illustrations and maps, index. $8.00.

Principles of Geomorphology, written by an Indiana University professor, is a complete, and well prepared, printed and illustrated treatise on a subject of great interest to all physical geographers. References are listed with each chapter and there is a good index.

The book is adequate in its treatment of the force that have affected the evolution of landforms. Special attention is given to the men who contributed to the development of the science of geomorphology. Credit is paid to the late Clyde A. Malott, under whom the author studied, and to whom the text is dedicated. Fundamental concepts and processes are analyzed and discussed. Both the fluvial and arid cycles of erosion are described with due consideration of their dependence on the rock structure and stage of erosion. Arguments for and against the peneplain concept are given. Attention is paid to the effects of folds, faults and other uplifts of the land on the characteristics of landforms. The chapters on ground water and of glaciers are both well done. Included are discussions of several theories for the development of limestone caverns and karst topography. Shorelines, volcanic features, theories for the origin of atolls, and the topography of ocean floors are other topics. Unusual features of the book include the practical uses of topographic maps, aerial photography, and the applications of geomorphology to hydrology and other phases of engineering. *Principles of Geomorphology* is a good book. It is recommended as well suited for class use in upper division courses in geomorphology, and for reference by students and teachers interested in the development of landforms.

Otis W. Freeman

State Teachers College
Indiana, Pa.

William Van Royen. **Atlas of the World's Resources: The Agricultural Resources of the World,** Vol. I. Prentice-Hall, Inc., New York, 1954. xxxiii and 258 pp. with charts, diagrams, tables, maps, index and references. $10.75.

An atlas such as this is indeed a labor of love. One instinctively turns for comparison to the contributions of V. C. Finch and O. E. Baker of three decades ago; in fact it was under the latter's initial leadership that the present project was initiated and it is to him that the volume is dedicated. The dedication to his memory refers to "his lifelong interest in graphic and cartographic presentation (which) was largely responsible for the inception of this work, and whose counsel was invaluable throughout." The earlier Atlas was prepared by the U.S. Department of Agriculture, and they had a large part in helping the Department of Geography at the University of Maryland prepare the maps for the current volume. Whereas the *Geography of the World's Agriculture* had 188 maps, *The Agricultural Resources of the World* contains 318.

The Atlas opens with world wide maps of climate, soils and population, and continues with maps of land use by continents and large areas. The bulk of the book is devoted to 23 crops or major categories, with five sections on animals: most topics receive at least 10 pages. Wheat is considered in 29 maps, rice has eight maps, and so on. Poultry is depicted in 12 maps. This is more than an atlas, for the text covers as much space as the maps. Here one may read of the environmental requirements for various crops, their origins, and their place in world economy. References to the literature are cited.

The Agricultural Resources of the World forms Volume One in a series whose title reads *Atlas of the World's Resources*. Volume Two by William Van Royen and Oliver Bowles, is entitled *The Mineral Resources of the World*, and appeared in 1952. A third

volume is to cover forest and fishery resources. The series is a magnificent contribution, one for which credit goes to Prentice-Hall as publishers, to the University of Maryland for their financial support, to Professor Van Royen as editor, and to the many unlisted people who must have devoted long hours to the necessary research.

GEORGE B. CRESSEY

Syracuse University

Vernon Quinn. **Picture Map Geography of the United States,** with Picture Maps by Paul Spener Johst. J. B. Lippincott Company. New York, 1953. 200 pages. $3.50.

Since this book is dedicated to a child who "hates geography" and one who "doesn't like it at all," we can assume that the author's purpose is to write "geography" in such a way that children will "love it." The book is not a textbook, but a book to be read for pleasure at home or in the library, the age level being about 10 to 12 years. The author employs a descriptive and narrative style to characterize each state of the United States, Alaska and Hawaii.

The narrative element in the story of each state usually consists of a brief account of the first settlement and the origin of the name of the state and other place names. There are inserts of Indian lore to add interest to the history of each state. Scenic attractions and noted places are briefly described. The chief occupations, cities and products are listed.

The only illustrations are black, white and blue pictorial maps: two of the United States, and one for each state, Hawaii and Alaska. These maps are perhaps intended to entertain the reader by adding a touch of humor rather than to instruct him. However, a child who has not already learned a good deal about the United States may get many wrong impressions. For example, on the small map of the United States, the only symbol on the Kentucky area is a tobacco leaf; an ear of corn is shown on the Tennessee area, but no corn is shown for Iowa and Illinois. Since there are no legends for the symbols, buckets of coal that stand for coal mines, old-style wooden churns for dairying and wheat being cut with a scythe, are inappropriate for geography maps.

All the maps are too small to give correct concepts of the surface features and the economy of each state.

RUBY M. HARRIS

Eastern Illinois State College
Charleston

Kani Evans. Hawaii, U.S.A. Series of six filmstrips entitled: **Hawaii Before the Coming of the White Man** (40 frames); **Hawaii—From Monarchy to U. S. Territory** (40 frames); **Honolulu—Capital of Hawaii, U.S.A.** (40 frames); **How Hawaii Earns Its Living** (40 frames); **Hawaii—Its People and Customs** (40 frames); and **Hawaii—and Statehood** (40 frames). The Filmstrip House, New York 36, N.Y. Each strip $6.00 and complete set $30.00.

The Teacher's Guide, which accompanies the filmstrips, carries the following notation: "A new and official filmstrip study of the Hawaiian Islands prepared in full color especially for the Social Studies curriculum of Senior High School and Junior High School level, and endorsed by the authorities of Hawaii's government, civic and historical organizations."

These filmstrips on the Hawaiian Islands leave the reviewer with mixed emotions. The color photography is excellent; the subject matter is inherently entertaining and often strikingly presented. But one cannot escape the conviction that much, much more

could have been done to edit and integrate the materials at hand. Perhaps the best that can be done with the anthropological story is to show view after view of museum exhibits, but surely the history of Hawaii can be told more graphically than to present a long succession of dead kings and queens served up with a smattering of biographical sauce. Where is the story of Hawaii's pathetic attempt to remain independent during the 19th century's period of burgeoning empires? Where is the story of conflicting British and American interests; the story of immigration of so many different people to these small islands, replacing the original inhabitants both physically and culturally. History is more vital and can be told more entertainingly than is done in these filmstrips. And surely high school students are mature enough to be told the facts.

The third, fourth and fifth strips, which deal with contemporary Hawaii, are more meaningful, except that the maps, especially the map of Oahu, are poor. Honolulu's picturesque and modern aspects are well portrayed, even to the point of possible exaggeration. The student can get a good idea of how Hawaiians earn a living, but unfortunately little about where they do it. The differences between the eight major islands are largely overlooked, giving the impression that Hawaii as a whole is as urban as Honolulu and Oahu, the island on which the capital city is located.

But it is in the sixth strip, where the case for Hawaiian Statehood is presented, that one becomes more conscious that something is lacking. In the reviewer's opinion Hawaii has a good argument for statehood, but feels that the case is not well served by merely showing a long roster of Hawaii's leading citizens. Mainland youngsters certainly will find this boring and meaningless. Hawaii is America's best effort at racial and social mixing, and a wise teacher can find ample illustration of it in these filmstrips. But unfortunately, it will be up to her to point it up. The faces of Hawaiian citizenry could be exceedingly interesting when looked at in this light.

MARION F. MURPHY

Princeton, Massachusetts

Vernon Quinn. **Picture Map Geography of Canada and Alaska.** Illustrated by Da Osimo. J. B. Lippincott Co., Philadelphia, 1954. 122 pages. $3.00.

A Picture Map Geography of Canada and Alaska, a revised edition of a book originally published in 1944, is written in travelogue style. Emphasis is placed upon geographic information. History and legend are used for background and color. Ten somewhat traditional black and white picture maps and a few sketches comprise the illustrations.

Geographic information is specific and comprises the chief element of this book. The first chapter is an overview of the Dominion of Canada; its industries, its political divisions, its major natural features. It creates a feeling of great expanse, great rivers, thousands of lakes, forests, farms and great industries. Then each of the ten provinces of Canada, Yukon, the Northwest Territories and Alaska is treated separately. The material included seems more suitable for instructional purposes than for independent reading as legends interspersed with factual information tend to be confusing to junior high school students.

The format is attractive. The print is large, the margins are wide, and the maps and sketches are appropriate to the information included in the text. An index would strengthen the book as supplementary reference material. Since the topics included are treated in a general manner, pupils may be encouraged to do research of a more detailed nature.

The Dale-Chall Readability Formula applied to this book indicates it is suitable for grades 7 and 8.

MARY L. BOSTICK

Demonstration School
Florida State University

Gertrude Hecker Winders. **Jim Bowie—boy with a hunting knife.** The Bobbs-Merrill Company, Inc., New York, 1953. 192 pages. $1.75.

This book is a worthy addition to the "Childhood of Famous Americans" Series. From 1804 when 8-year-old Jim Bowie shoots his first bear as it invades the family cabin until 1836 when Colonel Bowie gives his life in defense of the Alamo this action-packed book will delight the middle graders and early teenagers who read it.

The hardships of pioneer life fall lightly on the shoulders of Jim Bowie in his never-ending thirst for adventure. While he explores the Louisiana swamps he kills snakes quite casually as he watches for alligators to "lasso." Later, he works on his father's sugar plantation, engages in the lumber business and becomes a famous land dealer.

Knives are always a necessary part of Jim Bowie's equipment. As a child he whittles "knives" from the wild cane of the swamp and practices throwing knives endlessly. His skill in the use of knives for hunting and for fighting Indians or robbers is so remarkable that he becomes a legendary character. When he designs the "Bowie Knife" with the sharp edge of the blade on both sides he has the frontier's best weapon. His quick thinking and trigger-like action make even the terrible Comanches fear Jim Bowie.

History enters the story incidentally but it never becomes complicated by more than how events affect the life of the hero. Sam Houston, Davy Crockett and Stephen Austin are friends interested in doing what Jim Bowie believes to be necessary and right.

This book provides interesting material about a colorful part of American History which may well be used to provide a better understanding of pioneer life in the South and Southwest.

IRENE BROCKMYER

Avonworth Schools
Pittsburgh 2, Pennsylvania

N. K. Horrocks. **Physical Geography and Climatology.** Longmans, Green and Co., New York, 1953. xv and 368 pages including index. $3.50.

This is a textbook prepared for the secondary level in the British school system for students expecting to continue their studies at a higher level, but, although Mr. Horrocks writes with great clarity, the material presented would prove difficult for many college freshmen in this country.

The book is divided into six parts with parts one and two devoted to earth form and sculpture, and the treatment is comprehensive. So comprehensive, in fact, that it would be considered by the geologist as an infringement on his field if adopted by a geography department in this country where geology is taught in a separate department. Meteorology and weather are discussed in part three and climatology in part five, an arrangement which seems out of order to the reviewer. Part four deals with soils and plants and one chapter comprising part six is devoted to oceanography. Hydrology, glaciology, and the other subject matter of earth sciences is touched upon in the parts under the above headings.

Mr. Horrocks writes with great lucidity and his careful attention to full explanation with many line drawings to illustrate details makes the book one of the best introductory texts to come to my attention. Unfortunately, some of the illustrations are not very clear. Terminology used is frequently different from that common to our texts which is no particular drawback. The book is well bound, printed on good quality paper and in readable type. But for the exception cited above, I would recommend this book as a text for the college first course in geography.

LYLE R. FLETCHER

Bowling Green State University
Bowling Green, Ohio

GEOGRAPHICAL MATERIALS RECEIVED

Mario A. Pei and Frank Gaynor. **Dictionary of Linguistics.** Philosophical Library, New York, 1954. 238 pages. $6.00.

Gertrude Hecker. **Jim Bowie: Boy with a Hunting Knife.** Childhood of Famous Americans Series. Bobbs-Merrill, Indianapolis, 1953. 192 pages with illustrations. $1.75.

Ralph Izzard. **An Innocent on Everest.** E. P. Dutton and Company, New York, 1954. 319 pages with bibliography. $3.75.

William S. Roeder, Ed. **Dictionary of European History.** Philosophical Library, New York, 1954. viii and 316 pages. $6.00.

Jean Gottman. **A Geography of Europe,** Revised Ed. Henry Holt, New York, 1954, xii and 724 pages with pictures, maps, bibliography and index. $6.90.

Whipple and James. **Our Changing Earth.** The Macmillan Company, New York, 1954. x and 318 pages with index. $3.12.

Christiane Ritter. **A Woman in the Polar Night.** E. P. Dutton & Co., New York, 1954. 223 pages with drawings. $3.00.

Statistical Atlas of Costa Rica. Casa Grafica Ltda., San Jose, Costa Rica, 1953. 114 pages with illustrations, maps and tables. $3.50.

Edwin H. Hammond. **A. Geomorphic Study of the Cape Region of Baja California.** University of California Press, Berkeley, 1954. 94 pages with plates, illustrations and maps. $1.00.

Henry J. Warman. **Geography—Backgrounds, Techniques and Prospects.** Clark University Press, Worcester, Massachusetts, 1954. ix and 160 pages. $2.50 plus postage.

Howard R. Anderson, Editor. **Approaches to an Understanding of World Affairs.** Twenty-Fifth Yearbook of the National Council for the Social Studies, Washington 6, D.C. x and 478 pages. $3.50 paperbound, $4.00 clothbound.

French Bibliographical Digest-Science-Geology-No. 11 (Series II). The Cultural Division of the French Embassy, 972 Fifth Ave., New York 21, October, 1954. 102 pages with index. Free upon request.

Shirley W. Allen. **Conserving Natural Resources—Principles and Practice in a Democracy.** McGraw-Hill Book Co. Inc., New York, 1955. ix and 347 pages with tables, illustrations and index. $5.50.

Walter H. Voskuil. **Minerals in World Industry.** McGraw-Hill Book Company, Inc., New York, 1955. vii and 324 pages with tables, illustrations, bibliographies and index. $5.75.

Frederick K. Branom. **Free and Inexpensive Materials for Social Studies.** A Chicago Schools Journal Supplement, September-October, 1954. Chicago Teachers College, 6800 Stewart Avenue, Chicago 21, Illinois. 32 pages. 25 cents.

Hugh Hammond Bennett. **Elements of Soil Conservation.** 2nd Edition. McGraw-Hill Book Co., Inc., New York, 1955. x and 358 pages with illustrations, bibliography and index. $3.96.

M. R. Shackleton. **Europe, A Regional Geography,** fifth Edition. Longmans, Green and Co., Inc., New York, 1954. xvi and 525 pages with maps, illustrations, appendices and index. $5.50.

Vitold De Golish, translated from French by Nadine Peppard. **Primitive India.** E. P. Dutton and Co., Inc., New York, 1954. 52 pages exclusive of 82 full-page photographs. $7.50.

Rehabilitation and Development of Agriculture, Forestry and Fisheries in South Korea, a Report prepared for the United Nations Korea Reconstruction Agency by a Mission selected by the Food and Agriculture Organization of the United Nations. Columbia University Press, New York, 1954. xviii and 433 pages with tables, charts and maps. $8.50.

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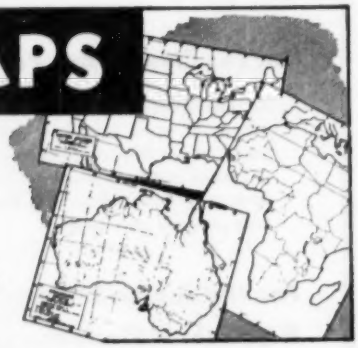

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Dr. George H. T. Kimble is secretary-treasurer and editor of the Newsletter of the International Geographical Union. Dr. Kimble's address is 330 West 42nd Street, New York 36, N.Y.

Coronet Instructional Films announces a new film, *The Making of the River*, which has been produced by The Conservation Foundation. As you know, Coronet Films is located at the Coronet Building, Chicago 1, Illinois.

New universal codes for transmission of weather information—adapted by the World Meterological Organization, a specialized agency of the United Nations—went into force thruout the world at midnight, Greenwich mean time, on January 1, 1955. These codes will be used in some 1,200 broadcasts and transmissions in which 110,000 daily weather observations for exchange between nations and continents are disseminated day and night, almost without interruption, WMO announced at its Geneva headquarters.

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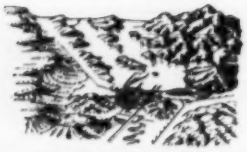

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EDITORIAL NOTES AND NEWS

Have you seen the new *Macmillan World Gazetteer and Geographical Dictionary?* The first printing is now available from the Macmillan Company, New York City.

There is an old and respectable truism that in sound education practice one should proceed from the known to the related unknown. Applied to geography, this truism necessitates a study of local geography before a study of geography in distant places.

Professor L. Dudley Stamp, University of London, London School of Economics, London W.C.2, England, is president of the International Geographical Union.

Zoe A. Thralls, past president of the NCGT and recipient of the Distinguished Service Award of our organization, will teach during the eight-week summer session at Stanford University. She will offer an eight-weeks course in World Geography, one four-weeks course in techniques for elementary teachers and one four-weeks course in techniques for high school teachers.

Dr. Norman Carls, president-elect of the NCGT and for several years, professor at American University, Washington, D.C., assumed the duties of chairman of the Department of Geography, University of Pittsburgh, February, 1955.

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BOOK REVIEW

Irving Krick and Roscoe Fleming. **Sun, Sea and Sky—Weather in our World and in our Lives.** J. B. Lippincott Co., Philadelphia and New York, 1954. 243 pages with photographs, line drawings and weather maps. $3.95.

A scientist trained in the field of meteorology has collaborated successfully with Mr. Fleming, a former newspaper man, to produce an up-to-date popular story of the behavior of the atmosphere and the problems associated with forecasting that behavior. The reader experiences a kind of "change in pace" presentation, that is, simple colorful statements easily understood by the average person alternating with comments which certainly require some technical background to comprehend. To be sure, the realm of meteorology has expanded tremendously and become quite complex in recent times. Attempts at simplification, a hazardous undertaking in any field, are bound to make an author vulnerable here and there. Yet on the whole, Krick and Fleming have done an excellent job.

The authors explain for the reader's benefit many phenomena and technical terms too often not made clear by other writers of popular meteorology. One might become a bit suspicious that Dr. Krick is propagandizing his major interest associated with rain-making; but for one who has concentrated as he has upon the problem of cloud-seeding and applied his knowledge to everyday life, the reader may well be tolerant of such enthusiastic expression.

Many topics could be selected as particularly interesting; we refer only to the chapter on Weather and War, Forecast for Yesterday, Today and Tomorrow, Tools of the Weatherman's Trade, When The Wind Blows, Fruits of Cloud-Seeding and the numerous sketches and photographs. We can commend this book to teachers of geography for their own edification, particularly those who have been exposed only to elementary courses or to no formal presentation, and also for the reading of the more simple discussions here and there by high school or freshman college students.

EUGENE VAN CLEEF

Ohio State University

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Professor Morton H. Fried
Columbia University

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INTRODUCTION TO PHYSICAL GEOLOGY

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